

1.0 CODES AND STANDARDS

- .1 Execute Work in accordance with the latest editions and supplements of the applicable regulations and standards listed below and as stated in the specifications:
 - .1 Manitoba Building Code
 - .2 Manitoba Fire Code
 - .3 Federal, Provincial and Municipal government laws, rules, ordinances and codes, where applicable.
 - .4 Refer also to item 6.12 of General Conditions for Construction Contracts.
- .2 **Where specified standards are not dated, conform to the latest issue of specified standard, amended and revised as of the date for receipt of bids.**
- .3 Work shall meet or exceed requirements of specified standards, codes and referenced documents. Even if permitted by preceding regulations and standards, grade of Work shall in no case be lower than specified in the project specifications.
- .4 Electrical components and equipment which are not CSA approved shall be approved by the Manitoba Department of Labour and Manpower prior to connection to the electrical service. Pay for all costs associated with obtaining the necessary approval.
- .5 Unless specified otherwise, the Contractor shall, at his own expense, obtain all required permits and certificates of inspection and approval from proper authorities. Refer also to item 6.13 of General Conditions for Construction Contracts.

1.1 BUILDING ENVELOPE

- .1 Comply with the National Building Code (NBC), 1995, Section 5 " Wind, Water and Vapour Protection". Building Envelope shall resist air leakage, vapour diffusion, rain penetration, moisture and groundwater infiltration, and flame spread.
- .2 Avoid penetrating through building envelope air barrier. Where penetrations are necessary, maintain integrity of air barrier by patching and making good to the approval of the Contract Administrator with approved material and methods.
- .3 Patch and make good building envelope at all locations where envelope has been penetrated as a result of removal and/or relocation of existing equipment, piping, ductwork, conduit, cable, wiring etc. Use only approved materials and methods.

1.2 CONSTRUCTION SAFETY

- .1 Observe and enforce all construction safety measures required by the Manitoba Building Code, Worker's Compensation Board, Municipal Statute or By-Laws. Refer also to item 6.24 of General Conditions for Construction Contracts.
- .2 In the event of conflict between any provisions of above authorities, the most restrictive provision shall apply.
- .3 During winter construction, when combustion type space heaters are employed, provide adequate ventilation for safety of workers.
- .4 Refer to Section 01545 - Safety Requirements for additional instructions and requirements. Refer also to the "Work Place Safety Health Act" clarification on Safety in Section 01545.
- .5 The Contractor shall be registered with the Workers Compensation Board of Manitoba and shall provide and maintain workers compensation coverage throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request. Refer also to item 6.15 of General Conditions for Construction Contracts.

1.3 LAYOUT OF THE WORK

- .1 Provide all devices required and assume full responsibility for and execute complete layout of the Work to main lines and levels in relation to designated reference points and bench marks. Protect all markings, bench marks and monuments from movement or destruction. Refer also to items 6.26 (g) & (h) of General Conditions for Construction Contracts.
- .2 Supply such devices as straight edges and templates required to facilitate Contract Administrator's review of Work.

1.4 DEFINITION OF TRADES

- .1 For convenience of reference only, the specifications are separated into the internationally recognized titled/trade sections. (See table of contents). Sections are identified by title and five digit number system.
- .2 The Contractor shall decide who supplies and installs required materials or equipment and extras will not be considered on the grounds of differences in interpretation of the Project Documents as to who performs what Work.
- .3 The Contractor is totally responsible as to who provides required materials or articles and Work.
- .4 ***The Bidders are to allow for Work to be completed after hours (after 6:00pm) and have all entrances and places of Work within the building cleaned and ready for safe usage/access by the staff and public by 5:00 am the next morning. Ensure the facility's entering and existing locations are maintained to the approval of the Local Authorities having Jurisdiction, local by-laws and Work Place Safety and Health Policies. This will also be applicable for parking lot accesses and other such requirements to assist The City in maintaining normal operations and maintaining security level of the building at all times. The Contractor shall need to have security clearance provisions put into place and must coordinate with The City on protocol required to ensure Central Control are continually communicated with and are kept aware of operations taking place within building time frames of Work , lock downs and other security policies being adhered to.***
- .5 Generally, construction activities shall be restricted to the Work areas as defined. Where Work must proceed outside of designated Work areas, all scheduling shall be arranged with the Contract Administrator prior to commencement of such Work. **The Contractor is to submit a Safety Access Plan as well as a Detailed Site Co-ordination Plan.**
- .6 The Contractor shall, in his construction schedule, allow a period of time from completion of one sequence to commencement of Work on the next sequence to allow for testing and commissioning of equipment, thus allowing time for The City employees to vacate the next Work area.
- .7 The Contractor shall provide a **Construction Schedule for each individual sequence of Work indicating commencement and completion dates for each sequence.** The Contractor shall be aware that Substantial Performance under the Lien Act applies to the Total Contract and not to the completion and occupancy of the individual Sequence of the Work.
- .8 The Contractor shall submit as-built drawings and maintenance manuals for each sequence of Work at completion of each sequence.

1.5 OCCUPIED AREAS

- .1 Areas adjacent to the designated Work areas will be occupied by staff and the public. The normal operations of the building will continue in occupied areas and will require access/usage of those places of Work.
- .2 Where Work must be performed in occupied areas, arrange with the Contract Administrator, a Work

schedule so the normal operations are not unduly interrupted. The City requires all Work be scheduled to be performed after hours only.

- .3 Co-ordinate, assemble and make ready all materials, equipment and workers prior to commencement of Work in each area, in order to minimize construction time and disturbance to each specified area.
- .4 At the end of each Work period, clean up, put tools, equipment, materials, etc., into secure lock-up; temporarily provide protection to cut and partially finished surfaces in order to protect staff, and the general public from possible injury.
- .5 The Contractor shall co-operate with any adjustments to procedures or scheduling as may be requested by the Contract Administrator.

1.6 USE OF SITE AND PREMISES

Refer also to C6 of General Conditions for Construction Contracts.

- .1 The Contractor's use of premises, Site access and construction activities are limited to those areas as defined on the drawings.
- .2 Construction personnel must use only designated entrances, corridors and stairs for access to Work areas, delivery of materials and/or equipment and removal of construction debris.
- .3 Restrict materials, equipment, Work and workers to designated areas and established routes to and from Work areas.
- .4 Storage of construction materials, tools, equipment, etc., in areas outside the designated Work areas is **not** permitted.
- .5 If required, obtain and pay for use of off Site storage or Work areas needed for operations or for delivered equipment or materials not required immediately on the premises.
- .6 Keep all fire lanes, egress and access routes clear at all times.
- .7 Parking restrictions will be applied and on Site parking will be allowed at the The City's discretion.

1.7 WORK UNDER SEPARATE CONTRACTS

Refer also to item C6.23 of General Conditions for Construction Contracts.

- .1 If the City shall retain the services of independent Contractors, under separate contract, to supply and install various items, the Contractor is to co-operate with the independent Contractor and co-ordinate the Work of the equipment, supply and installation, so as to coincide with the scheduled completion.
- .2 If reinstallation and retesting of the equipment is required as a consequence of correction of deficient or defective Work, the Contractor shall reimburse the City for the costs incurred.

1.8 OCCUPANCY OF WORK AREAS BY THE CITY

Refer also to C8 of General Conditions for Construction Contracts.

- .1 The City reserves the right to enter and occupy Work areas in whole or in part before completion of Contract provided that, in the opinion of the Contract Administrator, such entry and occupancy does not prevent or interfere with the Contractor in completion of the Contract.
- .2 Such entry and occupation by the City is not to be considered as acceptance of the Work and will not relieve the Contractor from responsibility to complete the Contract.

1.9 ALTERATION WORK

- .1 Refer to respective trade sections and drawings for removal of salvage materials.
- .2 Except for items specifically noted, waste or abandoned materials and equipment are the Contractor's property and shall be promptly removed from the Site.
- .3 Where penetrations through existing walls or floors result from the removal or relocation of existing equipment, piping, ductwork or conduit, repair to standard of construction of surrounding materials.
- .4 Where new Work joins existing Work, cut, patch and make good to match existing adjacent.
- .5 Patch and repair penetrations and openings in roof assemblies. Make weather tight.
- .6 Fit Work tight to penetrations through partitions, walls, roof and floor assemblies. Seal all penetrations air tight with approved materials to prevent the migration of smoke in the event of fire.
- .7 All penetrations in fire rated assemblies, including floors, shall be sealed with fire stopping materials approved by the Underwriters Laboratories of Canada (ULC).
- .8 Notify the Contract Administrator a minimum of seven (7) working days prior to removal, cutting, drilling or sleeving of structural or load-bearing members, including floor slabs. Mark out exact locations and dimensions to allow inspection. Do not proceed with the Work until the Contract Administrator has inspected and approved the proposed Work.
- .9 Patch and make good all damage to existing construction and finishes resulting from Work of this Contract.
- .10 Keep cutting to no more than 10% larger than outside dimensions of item penetrating another material.

1.10 EXISTING SERVICES

- .1 Existing Mechanical and Electrical services CANNOT be interrupted for any reason whatsoever.
- .2 The Contractor is responsible to identify and confirm the location of all services within construction areas and to be absolutely certain of their origin and destination.
- .3 Where services are concealed within the walls, floors or ceilings and cannot be visually identified, the Contractor shall provide electronic scanning devices or other approved means to locate and identify any concealed services.
- .4 Confirm location and identification with the Contract Administrator prior to commencement of Work in any construction area.
- .5 Periods for shutting off mechanical and/or electrical services must be acceptable times approved by the Contract Administrator.
- .6 **Special precautions must be undertaken to protect and maintain continuous services, which may be located in the construction areas and are required to remain active to service the public and staff. This would include buried utilities that may interfere with execution of any portion of the Work**
- .7 Under no circumstances shall a Contractor or any person employed by or directly related to them shut off or start up any existing building service. **This shall be performed only by The City representative's** unless otherwise notified. Initiate requests for service shutdowns and start-ups through the Contract Administrator.
- .8 Included in the above are electrical panels and distribution.
- .9 The Contractor shall include for required connections, temporary or permanent, for continuance of existing services. Overtime, if necessary to make such connections, shall also be included in this contract.

1.11 ABANDONED SERVICES

- .1 Unless specifically noted otherwise, remove all abandoned or redundant existing mechanical and electrical services and equipment including lines, ducts, pipes, etc. and electrical services and equipment including wiring, fixtures, etc. in those partitions of existing areas which are being renovated or demolished.
- .2 Terminate abandoned or redundant mechanical and electrical services at their main supply.
- .3 In ceiling spaces, crawlspaces, electrical rooms, mechanical spaces and similar spaces where there is a concentration of services, redundant services due to Work performed under this project shall be removed (including associated hangers, supports, fasteners, etc.). In other areas, redundant service piping, ducting, conduit, wiring, cable, etc. may be abandoned only if specific written permission has been obtained from the Contract Administrator and only in cases where they are concealed and enclosure is NOT scheduled to be removed and/or replaced under this contract. Written permission shall list specific electrical/mechanical abandoned services and specific locations where they are to be abandoned. A copy of this shall be sent to the Contract Administrator. The ends of the terminated/redundant services shall be identified by a mechanically fastened plastic identification tag.
- .4 Record all services disconnected and removed on as-built record drawings. Turn as-built drawings over to the Contract Administrator immediately after removal is complete.

1.12 EXISTING EQUIPMENT AND MATERIALS

- .1 Disconnect, relocate and reinstall existing equipment and materials as indicated or listed on schedules.
- .2 Co-ordinate a time schedule for relocation that is satisfactory to the Contract Administrator. Contact the Contract Administrator in order to co-ordinate the Work with end users.
- .3 Dis-connecting and/or reconnecting mechanical or electrical services for equipment shall be performed by the Contractor's trades.
- .4 Package and protect as necessary to prevent damage during storage and relocation.
- .5 Salvage and return to the City, as directed by the Contract Administrator, all items indicated for salvage.

1.13 GLASS BREAKAGE

Refer also to C10 of General Conditions for Construction Contracts.

- .1 Contractors shall be responsible for all glass that is broken, scratched or cracked during the execution of the Work and shall replace such glass at their own expense.

1.14 CEILINGS

- .1 Existing acoustical ceilings identified for reuse or required to be removed for accessibility to the Work shall be removed and stored by the Contractor. Ceilings shall be re-installed when Work necessitating removal has been completed. Damaged materials shall be replaced with new, at no added cost to the contract.
- .2 In occupied areas, vacuum tops of ceiling tiles or panels prior to and during removal to minimize airborne dust. Clean floor under removal areas, as Work progresses.
- .3 If ceiling space is suspected to be contaminated by asbestos, contact the Contract Administrator and arrange for abatement.

1.15 CLEANUP AND FINAL CLEANING OF THE WORK

Refer to C9 of General Conditions for Construction Contracts.

- .1 The Contractor shall maintain the Site and the Work in a tidy condition and free from the accumulation of waste products and debris. Upon attaining Substantial Performance of the Work, the Contractor shall remove any products, tools, construction machinery and equipment not required for the performance of the remaining Work. He shall also remove waste products and debris, and clean for suitable occupancy, unless otherwise specified.
- .2 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all plant and surplus products, tools, construction materials and equipment. The Contractor shall also have removed waste products and debris.

1.16 MOCK-UPS

- .1 The Contractor shall erect mock-ups for inspection of materials and workmanship to allow the Contract Administrator to make adjustments to fixture or equipment location and/or material installation process, as may be necessary.
- .2 The mock up shall not be limited and all mock-ups shall be a part of the finished Work as designated by the Contract Administrator and where specified throughout the contract documents. They shall be as complete as possible with all materials, finishes, fixtures and equipment indicated for installation.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

- .1 Section 01000 - General Provisions
- .2 Section 01601 - Material and Equipment
- .3 Individual Product Sections: cutting and patching incidental to Work of the section. Advance notification to other sections required.

1.3 SUBMITTALS

- .1 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of any element of Project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.
- .2 Include in request:
 - .1 Identification of Project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of The City or separate Contractor.
 - .7 Date and time Work will be executed.

1.4 MATERIALS

- .1 Required for original installation.

1.5 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting, patching or alteration means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; devices and methods to protect other portions of Work from damage.
- .5 Provide protection from elements for areas which may be exposed by uncovering Work; maintain excavations free of water.

1.6 EXECUTION

- .1 Execute cutting, fitting, patching and alteration, including excavation and fill, to complete the Work.
- .2 Fit the several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.

- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools are not allowed on masonry Work without prior approval.
- .10 Restore Work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with fire stopping material, full thickness of the construction element.
- .13 Refinish surfaces to match adjacent finishes: For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Shop drawings and product data
- .2 Samples
- .3 Certificates and transcripts
- .4 *Refer to C6.10 of General Conditions for Construction Contracts*

1.2 RELATED SECTIONS

- .1 Section 01400 - Quality Control: Submission of test and mix design.
- .2 Section 01601 - Material and Equipment: Submission of manufacturer's instructions.
- .3 Section 01670 - Systems Demonstration: Submission of system and equipment documents.
- .4 Section 01721 - Project Record Documents: Operating and maintenance manuals, and record drawings.

1.3 ADMINISTRATIVE

- .1 Submit to the Contract Administrator all submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 **Work affected by the submittal shall not proceed until review is completed BY THE CONTRACT ADMINISTRATOR.**
- .3 Present shop drawings, product data, samples and mock-ups in the same units as the contract documents.
- .4 Contractor to review submittals prior to submission to the Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with the requirements of the Work and the contract documents. Submittals not stamped by the Contractor, signed, dated and identified as to the specific project will be returned without being examined and shall be considered rejected.
- .5 Verify field measurements and affected adjacent Work are coordinated.
- .6 Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by the Contract Administrator's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Contract Administrator's review.
- .9 Keep one reviewed copy of each submission on Site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by the Contractor to illustrate details of a portion of the Work. *See C1.1 (v) of General Conditions for Construction Contracts.*
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where

- articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of the Section under which the adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 10 working days for Contract Administrator's review of each submission.
 - .4 Adjustments made on shop drawings by the Contract Administrator are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Contract Administrator prior to proceeding with the Work and do so in accordance with *C7 of General Conditions of Construction Contracts*.
 - .5 Make changes in shop drawings as the Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify the Contract Administrator in writing of any revisions other than those requested.
 - .6 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .6 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 **Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.**
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout , showing dimensions, including identified field dimensions, and clearances.
 - .3 Settings or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring Diagrams.
 - .9 Single line and schematic diagrams
 - .10 Relationship to adjacent Work.
 - .6 After Contract Administrator's review, distribute copies.
 - .7 **Electronic files** of drawings for the purpose of shop drawing preparation may be obtained from the Contract Administrator provided a waiver is signed by the person or company requesting the drawings. A fee of \$50.00 per drawing will be charged.
 - .8 Submit one transparency and designated number of prints of shop drawings for each requirement requested in specification sections and as the Contract Administrator may reasonably request.
 - .9 Submit one electronic copy of product data sheets or brochures for requirements requested in specification sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacturer's of product. Delete information not applicable to project and supplement standard information to provide details applicable to project.
 - .10 Submit six (6) copies of product data sheets or brochures for requirements requested in specification sections and as the Contract Administrator may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.
 - .11 If upon review by the Contract Administrator, no errors or omissions are discovered or if only

minor corrections are made, the transparency will be returned and fabrication and installation of the Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through the same procedure indicated above, shall be performed before fabrication and installation of Work may proceed.

1.5 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification sections. Label samples as to origin and intended use in the Work.
- .2 Deliver samples prepaid to Contract Administrator's business address.
- .3 Samples are to be a true and accurate representation of the product. If the product differs upon delivery, it will be rejected with no extension to contract price or time.
- .4 Notify the Contract Administrator in writing, at the time of submission, of deviations in samples from requirements of Contract Documents.
- .5 Where colour, pattern or texture is critical, submit full range of samples.
- .6 Adjustments made on samples by the Contract Administrator are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Contract Administrator prior to proceeding with the Work and do so in accordance with *C7 of General Conditions of Construction Contracts*.
- .7 Make changes in samples, which the Contract Administrator may require, consistent with Contract Documents.
- .8 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests and mix designs.
- .3 Mock-ups
- .4 Mill tests.
- .5 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

- .1 Section 01000 - General Provisions
- .2 Section 01300 - Submittals: Submission of samples to confirm product quality.
- .3 Section 01601 - Material and Equipment: Material and workmanship quality, reference standards.
- .4 Section 01721 - Project Record Documents - Submittal of close out documents

1.3 INSPECTION

- .1 *Refer to C8 and C11 in General Conditions of Construction Contracts.*
- .2 The Contract Administrator shall have access to the Work. If part of the Work is in preparation at locations other than the Place of the Work, access shall be given to such Work whenever it is in progress.
- .3 Give timely notice requesting inspection of Work as designated for special tests, inspections or approvals by Contract Administrator instructions, or as instructed by authorities having jurisdiction of the place of Work.
- .4 If the Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have the inspections or tests satisfactorily completed, and make good such Work.
- .5 The Contract Administrator may order any part of the Work to be examined if the Work is suspected to be not in accordance with the Contract Documents. If, upon examination, such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination and correction.

1.4 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by the Contractor Administrator for the purpose of inspecting and/or testing portions of Work.
- .2 Provide equipment required for executing inspection and testing by the appointed agencies.
- .3 Employment of inspection/testing agencies does not relax the responsibility to perform Work in accordance with the Contract Documents.
- .4 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Contract Administrator at no cost to the The City. Pay costs for retesting and re-inspection.

1.5 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to the Work, off Site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

- .1 *Refer also to C9 in General Conditions of Construction Contracts.*
- .2 Notify the appropriate agency and Contract Administrator in advance of the requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on Site. Provide sufficient space to store and cure test samples.

1.7 REJECTED WORK

- .1 *Refer also to C11.7 in General Conditions of Construction Contracts.*
- .2 Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in the Work or not, which has been rejected by the Contract Administrator as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contracts Documents.
- .3 Make good other Contractor's Work damaged by such removals or replacements promptly.

1.8 REPORTS

- .1 Submit 4 copies of inspection and test reports to the Contract Administrator.
- .2 Contractor to provide copies to Trades performing the Work being inspected or tested or to manufacturer or fabricator of material being inspected or tested.

1.9 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as may be requested.
- .2 All poured concrete mixes shall be sample tested and checked for specified strength.
- .3 All bedding and backfill will be compacted and tested and must meet the requirements specified before sodding, asphaltting of roadways or replacing of curbs commence.
- .4 All PVC piping shall be hydrostatically tested.

1.10 MOCKUP

- .1 Prepare mock-up for Work specifically requested in the specifications. Include for Work of all Sections required to provide mock-ups.
- .2 Construct in a location acceptable to the Contract Administrator.
- .3 Prepare mock-up for Contract Administrator review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work.
- .4 Failure to prepare mock-up in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

- .6 If requested, the Contract Administrator will assist in preparing a schedule fixing the dates for preparation.
- .7 Remove mock-up, if not designated to remain as a part of the finished Work, at conclusion of Work or when acceptable to Contract Administrator.
- .8 Mock-up may remain as part of the Work if acceptable to Contract Administrator.

1.11 MILL TESTS

- .1 Submit mill test certificates as may be requested of the specification Sections.

1.12 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- .2 The product and systems suppliers shall identify, defend and hold harmless The City from and against all claims, losses, damages or costs from breach of the foregoing warranties. This indemnification shall not be subject to any limitations of remedies or warranties which are contained in this or any other agreement and shall survive the termination of any agreements regarding this project.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Temporary utilities.
- .2 Construction facilities.
- .3 Temporary controls.

1.2 RELATED SECTIONS

- .1 Section 01045 - Cutting, Patching and Alteration.
- .2 *C: 6.24 of General Conditions for Construction Contracts.*

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities, facilities and controls in order to execute the Work expeditiously.
- .2 Make temporary connections to the existing utilities in order to execute Work and only upon written approval from the Contract Administrator. All utility connections are to conform to standards set by the City.
- .3 Arrange for connection and disconnection of temporary services with the Contract Administrator. The Contractor is responsible for any costs associated with location of shut off of valves, power, temporary connections, etc.
- .4 Remove from Site all such Work after use and leave utilities in working condition to satisfaction of the Contract Administrator.

1.4 SANITARY FACILITIES

- .1 Provide sufficient sanitary facilities for workers in accordance with local health authorities and maintain premises in a sanitary condition. Post notices and take such precautions required by local health authorities. *See item 6.26 (f) of General Conditions for Construction Contracts.*

1.5 WATER SUPPLY

- .1 Provide a continuous supply of potable water for construction use.
- .2 Arrange for connection with utility company and pay all costs for installation, maintenance and removal.

1.6 DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and Site free from standing water.
- .2 **The Contractor will be responsible to provide all required excavation and dewatering at the designated locations for installation of footings, piles and to do so as per project manual specifications and contract drawing documentation. Refer to structural drawings for footing applications.**

1.7 TEMPORARY HEATING

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Maintain temperatures of minimum 10° C in areas where construction is in progress, unless indicated otherwise in specifications.

- .3 The permanent heating system of the building, or portions thereof, may be used upon the Contract Administrator's approval when available. Be responsible for damage thereto.
- .4 On completion of Work for which the permanent heating system is used, replace filters, replace bearings in fans and clean.
- .5 Construction Heaters used inside buildings must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- .6 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of the Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .7 Ventilating:
 - .1 Prevent accumulation of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 During stoppage of Work, continue operation of ventilation and exhaust system to assure removal of harmful contaminants.
- 8 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .9 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.8 TEMPORARY POWER AND LIGHT

- .1 The Contractor will pay for temporary power during construction used for temporary lighting and operating of power tools.
- .2 Temporary power for electric cranes and other equipment requiring in excess of available power is the responsibility of the Contractor.
- .3 Provide and maintain temporary lighting throughout the project.

1.9 TEMPORARY TELEPHONE AND FACSIMILE

- .1 Provide and pay for temporary telephones, data hookup, and facsimile service necessary for own use and use of Contract Administrator.

1.10 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
- .2 Hoists and cranes shall be operated by qualified operators.

1.11 SITE STORAGE AND OVER LOADING

- .1 Confine the Work and the operations of employees to limits indicated by the Contract Documents. Do not unreasonably encumber the premises with products.
- .3 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the Work.
- .4 ***The Contractor is to restore the existing Site finishes/services (exterior) affected by the construction equipment, material deliveries, Contractor Site trailers etc. Restoration of the existing finishes such as pavement, grass, gravel, etc., shall be completed to the approval of the Contract Administrator and will be done so at no extra cost. This to include for all interior finishes affected by the delivery of materials and access of Site personnel.***

1.12 CONSTRUCTION PARKING

- .1 All Contractors will be responsible for the cost of parking permits, if required.
- .2 The Contractor, its suppliers, servants and agents, when upon the property of the City, shall use only such streets, roads and parking lots and follow such course going to and from the actual Site of the Work, as the City shall designate. The Contractor shall not permit any vehicle under its control to stand or be parked upon the property without authorization of the Contract Administrator. Vehicles parked unauthorized areas may be towed away at the vehicle The City's expense.

1.13 OFFICES

- .1 Provide and maintain in clean condition during progress of Work, adequately lighted, heated and ventilated Contractor's office with space for filing and layout of Contract Documents.

1.14 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials. *Refer also to C 6.25 of General Conditions for Construction Contracts.*
- .2 The Contractor shall be responsible for all storage of his own equipment. The City shall not be responsible for lost or damaged Contractor owned equipment or tools.
- .3 Locate materials not required to be stored in weatherproof sheds on Site in a manner to cause least interference with Work activities.

1.15 TEMPORARY BARRIERS AND ENCLOSURES

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 All temporary barriers, enclosures, etc. are to be approved by the Contract Administrator for type, style, size and construction materials prior to installations
- .3 Remove from Site all such Work after use to the satisfaction of the Contract Administrator.
- .4 **HOARDING:**
 - .1 Erect and maintain hoarding as required to protect the public, workers, public and private property from injury or damage.
 - .2 Erect temporary Site enclosures using 2" x 4" construction grade lumber framing at 24" centres and 4' x 8' x ½" exterior grade fir plywood to CSA 0121-M1978.
 - .3 Apply plywood panels vertically flush and butt jointed.
 - .4 Provide at least one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

- .5 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .6 Paint public side of Site enclosure in selected colours with one coat primer to CGSB 1.189M and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.
- .7 Erect temporary Site enclosure using 4'-0" high snow fence wired to rolled steel "T" bar fence posts spaced at 8'-0" o.c. Maintain fence in good repair.
- .8 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

.5 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior Work area for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

.6 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.

7 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for the protection of workers, finished areas of Work and the public.
- .2 Maintain and relocate protection until such Work is complete.

.8 PROTECTION OF EXISTING BUILDING FINISHES AND EQUIPMENT

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Be responsible for damage incurred due to lack of or improper protection. Such items to consider are, having to clean buildings, side damages, road damages, restoration of grounds, etc.
- .3 Protect relics, antiquities, items of historical or scientific interest, such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during the course of Work.
 - .1 Give immediate notice to Contract Administrator and await Contract Administrator's written instructions before proceeding with Work in this area.
 - .2 Relics, antiquities and items of historical or scientific interest and value remain the property of the The City.

1.16 DISPOSAL OF EXISTING DEMOLISHED MATERIALS FROM SITE

- .1 Provide for the immediate disposal of all removed materials from the Site and temporary storage into dumpsters on Site will be the responsibility of the Contractor.
- .2 The Contractor is to adjust Working Hours to lessen disturbance of the The City's premises if called upon to do so.
- .3 Removal of existing material will be the responsibility of the Contractor and any usage of existing Plant and Equipment will need written authorization from the Contract Administrator.
- .4 Contractor to obtain landfill information and regulations from the City Of Winnipeg.

1.17 SITE SIGNAGE

- .1 The Contract Administrator and the Contractor are to direct requests for approval to erect a Contract Administrator/Contractor signboard to The City for comments and their approval. For consideration of general appearance the Contract Administrator/Contractor signboard must conform to project identification Site signage.
- .2 Signs and notices for safety and instructions shall conform to CAN3-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off Site on completion of project or earlier if directed by the Contract Administrator.

1.18 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by Insurance companies having jurisdiction and governing codes, regulations and bylaws.

END OF SECTION

1 General

1.1 REFERENCES

- .1 CSA S269.1-1975 Falsework for Construction Purposes.
- .2 CAN/CSA-S269.2-M87 Access Scaffolding for Construction Purposes.
- .3 FCC No. 301-1982 Standard for Construction Operations.

1.2 CONSTRUCTION SAFETY MEASURES

- .1 Observe construction safety measures of National Building Code 1990 Part 8, Provincial Government, Workers'/Workmen's Compensation Board and municipal authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.
- .2 Comply with requirements of FCC No. 301.

1.3 OVERLOADING

- .1 Ensure no part of Work is subject to loading that will endanger its safety or will cause permanent deformation.

1.4 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1.

1.5 SCAFFOLDING

- .1 Design and construct scaffolding in accordance with CSA S269.2
- .2 All scaffolding beyond 20'- 0 " in height to be designed and under engineer's stamp, (registered in the Province of Manitoba) and be in conformance with all applicable safety standards.

1.6 WHMIS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.
- .2 Deliver copies of WHMIS data sheets to Contract Administrator on delivery of materials.

END OF SECTION

1 General

Refer also to C:6.27 and C6.27.1 of General Conditions for Construction Contracts.

1.1 FIRES

- .1 Fires and burning of rubbish on Site are not permitted.

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on Site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and Site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on Site and adjacent properties where indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 6 ft.
- .3 Protect roots of designated trees to dripline during excavation and Site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation. The following mitigation measures are required to prevent or minimize soil loss from the construction area:
 - .1 Clear only the minimum of vegetation required.
 - .2 Preserve vegetation cover for as long as possible.
 - .3 Use engineered erosion control measures such as silt fences, berms, silt blankets, as necessary.
- .5 Restrict tree removal to areas indicated or designated by Contract Administrator. Best practice shall be implemented so that only the minimum number of trees is cleared. Landscaping around the building after construction will help to compensate for some lost vegetation and contribute to urban green space.

1.5 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.6 SMOKING ON THE SITE

- .1 There will be no smoking allowed on the Site.

1.7 DECREASED AIR QUALITY FROM FOSSIL FUEL EMISSIONS DURING CONSTRUCTION

- .1 The following mitigation measures are proposed to reduce emissions from vehicle and equipment use:
- .1 A high standard of inspection, maintenance and operational practices shall be implemented for all vehicles and equipment to meet manufacturer's specifications for fuel consumption.
 - .2 No ozone depleting substances shall be used or generated from equipment during construction.
 - .3 Alternative fuels such as gasohol shall be used when possible.
 - .4 Carpooling shall be encouraged for construction personnel, facility employees and the public to reduce fuel consumption.
 - .5 Speed limits shall be adhered to in order to optimize fuel economy.

1.8 DECREASED HUMAN HEALTH DUE TO INCREASED NOISE DURING CONSTRUCTION

- .1 The following mitigation measures are required to decrease the effects of noise generated during construction:
- .1 All City by-laws and Provincial legislation pertaining to noise produced by construction shall be followed.
 - .2 All construction equipment and vehicles shall be inspected and maintained for maximum noise suppression.
 - .3 All workers at the construction Site shall use proper equipment to protect themselves from loud noise.
 - .4 Vehicles and equipment shall not be left running or operating if not in use.
 - .5 No construction tools or equipment may be operated on Sundays or on weekdays between the hours of 10:00PM and 7:00AM the following day or on Saturdays and statutory holidays before 9:00AM and after 9:00PM.

1.9 STANDARD CONSTRUCTION MITIGATION MEASURES

- .1 Standard mitigation measures must be followed during construction:
- .1 No re-fueling or servicing of construction equipment within 100 meters of a water body.
 - .2 Propose collection and disposal of waste oil products from construction equipment in accordance with Manitoba laws.
 - .3 Proper collection and disposal of all construction wastes from the construction Site.
 - .4 Use, handling and storage of fuels and petroleum products in accordance with Manitoba Regulation MR 188/2001.
 - .5 Contractor shall have spill clean-up materials on Site with a minimum of 25kg of suitable commercial sorbent, 30 square metres of 8 mil polyethylene, and an empty fuel barrel for spill collection and disposal (CPWCC 1999).
 - .6 Notification of Contract Administrator and Manitoba Conservation in the event of any spills of petroleum products or hazardous materials in accordance with Manitoba regulations (MR 439/87).
 - .7 Construction equipment shall be properly maintained to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants.
 - .8 Topsoil shall be conserved by removal and stockpiling prior to construction.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Reference standards.
- .2 Product quality, availability, storage, handling, protection, transportation.
- .3 Manufacturer's instructions.
- .4 Workmanship, coordination and fastenings.
- .5 Existing facilities.

1.2 RELATED SECTIONS

- .1 Section 01400 - Quality Control: Quality control and inspection of Work.
- .2 *C:11 Inspection – Found within General Conditions for Construction Contracts*

1.3 REFERENCE STANDARDS

- .1 Within the text of the specifications, reference may be made to the following standards:

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society of Testing and Materials
CEC	Canadian Electrical Code (published by CSA)
CEMA	Canadian Electrical Manufacturer's Association
CGSB	Canadian General Standards Board
CISC	Canadian Institute of Steel Construction
CLA	Canadian Lumberman's Association
PCA	Canadian Painting Contractors' Association
CPCI	Canadian Prestressed Concrete Institute
CRCA	Canadian Roofing Construction Association
CSA	Canadian Standards Association
FM	Factory Mutual Engineering Corporation
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
NAAMM	National Association of Architectural Metal Manufacturers
NBC	National Building Code
NEMA	National Electrical Manufacturers' Association
TTMAC	Terrazzo, Tile and Marble Association of Canada
ULC	Underwriters' Laboratories of Canada
- .2 Conform to these standards, in whole or in part, as specifically requested in the specifications.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, the Contract Administrator reserves the right to have such products or systems tested to prove or disprove conformance.
- .4 The cost for such testing will be born by the Contractor in the event such testing confirms non-conformance with Contract Documents.
- .5 Conform to latest date of issue of referenced standards in effect on date of submission of bids, except where a specific date or issue is specifically noted.

1.4 QUALITY

- .1 *Refer also to C: 6.1. 6.5 and C:11 " Defective Work" of General Conditions for Construction Contracts.*
- .2 Products, materials, equipment and articles (referred to as Products throughout the specifications) incorporated in the Work shall be new, not damaged or defective, and of the best quality (compatible with specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.
- .3 Defective Products, whenever identified prior to the completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is a precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should any dispute arise as to the quality or fitness of Products, the decision rests strictly with the Contract Administrator based upon the requirements of the Contract Documents.
- .5 Unless otherwise indicated in the specifications, maintain uniformity of manufacturer for any particular or like item throughout the building. Failure to do so will result in rejection of the product and replacement will be required at Contractor's expense and the Contractor will be responsible for delays and expenses caused by rejection.
- .6 Materials or products of likeness are to be ordered at one time to ensure uniformity.
- .7 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

- .1 Immediately upon signing the Contract, review Product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of Products are foreseeable, notify the Contract Administrator of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In the event of failure to notify the Contract Administrator at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Contract Administrator may decide to substitute more readily available products of similar character, at no increase in Contract Price or time.

1.6 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store Products in a manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled Products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in the Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and masonry materials on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in a heated and ventilated room. Remove oily rags and other combustible debris from Site daily. Take every precaution necessary to prevent spontaneous combustion.

- .8 Remove and replace damaged Products at own expense and to the satisfaction of the Contract Administrator. Be responsible for delays and all expenses associated.

1.7 TRANSPORTATION

- .1 Pay costs of transportation of Products required in the performance of Work.
- .2 In the event the City delivers any such Product to be incorporated into the Work the Contractor shall be required to unload, handle and store such Products.

1.8 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.
- .2 Notify the Contract Administrator in writing, of conflicts between the specifications and manufacturer's instructions, well in advance, so that the Contract Administrator may establish the course of action.
- .3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes the Contract Administrator to require removal and reinstallation at no increase in Contract Price or time.

1.9 WORKMANSHIP

- .1 *Refer also to C: 5 of General Conditions for Construction Contracts.*
- .2 Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Contract Administrator if required Work is such as to make it impractical to produce required results as failure to do so will result in no extension to Contract Price or time.
- .3 Do not employ any unfit person or anyone unskilled in their required duties. The Contract Administrator reserves the right to require the dismissal from the Site, workers deemed incompetent, careless, insubordinate or otherwise objectionable.
- .4 The Contract Administrator will provide a decision to the quality or fitness of workmanship.

1.10 COORDINATION

- .1 *Refer also to C: 6.23 of General Conditions of Construction Contracts.*
- .2 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision to ensure there is no conflict in the Work.
- .3 Be responsible for coordination and placement of fixtures, openings, sleeves, shafts, raceways, equipment, products and accessories.
- .4 Be responsible for cost to Contract Price and Time due to lack of coordination.

1.11 CONCEALMENT

- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform the Contract Administrator if there is a contradictory situation. Install as directed by Contract Administrator.

1.12 REMEDIAL WORK

- .1 *Refer also to C11 of General Conditions for Construction Contracts and Section 01045.*
- .2 Perform remedial Work required to repair or replace the parts or portions of the Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .3 Perform remedial Work by specialists familiar with the materials affected. Perform in a manner to neither damage nor endanger any portion of Work.

1.13 LOCATION OF FIXTURES

- .1 Consider the location of fixtures, outlets, and mechanical and electrical items indicated as approximate. Locations may vary up to one meter resulting in no increase in Contract Price or time.
- .2 Inform the Contract Administrator of a conflicting installation. Install as directed.

1.14 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior Work, unless stainless steel or other material is specifically requested in the affected specification Section.
- .4 Space anchors within their load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.15 PROTECTION OF WORK IN PROGRESS

- .1 *Refer also to C:6.24 and 6.25 of General Conditions for Construction Contracts*
- .2 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by the Contract Administrator, at no increase in Contract Price or time.
- .3 Prevent overloading of any part of the building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Contract Administrator.

1.16 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with a minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in a manner approved by authority having jurisdiction; stake and record location of capped service.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Cooperate with testing organization services under provisions specified in Section 01400.
- .2 Provide testing organization services under provisions specified in Sections 15000 and 16000.

1.2 RELATED SECTIONS

- .1 Section 01000 : General Provisions - Inspections, tests, and approvals required by public authorities.
- .2 Section 01400 - Quality Control: Employment of testing agency and payment for services.

1.3 QUALITY ASSURANCE

- .1 Testing organization: current member in good standing, certified to perform specified services.
- .2 Comply with applicable procedures and standards of the certification sponsoring association.
- .3 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

1.4 REFERENCES

- .1 Associated Air Balance Council (AABC): National Standards For Field Measurements and Instrumentation, Total Systems Balance, Air Distribution-Hydraulics Systems.

1.5 SUBMITTALS

- .1 Prior to start of Work, submit name of organization/Contractor personnel proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.
- .2 Submit documentation to confirm organization/personnel compliance with quality assurance provision.
- .3 Submit 3 preliminary specimen copies of each of the report forms proposed for use.
- .4 **Fifteen days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.**
- .5 Submit reports of testing, adjusting, and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

1.6 PROCEDURES - GENERAL

- .1 Comply with procedural standards of certifying association under whose standard services will be performed.
- .2 Notify Contract Administrator 3 days prior to beginning of operations.
- .3 Accurately record data for each step.
- .4 Report to Contract Administrator any deficiencies or defects noted during performance of services.

1.7 FINAL REPORTS

-
- .1 Organization having managerial responsibility shall make reports.
 - .2 Each form shall bear signature of recorder, and that of supervisor of reporting organization.
 - .3 Identify each instrument used, and latest date of calibration of each.

1.8 CONTRACTOR RESPONSIBILITIES

- .1 *Refer also to C6 of General Conditions for Construction Contracts*
- .2 Prepare each system for testing and balancing.
- .3 Cooperate with testing organization; provide access to equipment and systems.
- .4 Provide personnel, operate systems at designation times, and under conditions required for proper testing, adjusting and balancing.
- .5 Notify testing organization 7 days prior to time project will be ready for testing, adjusting and balancing.

1.9 PREPARATION

- .1 Provide instruments required for test, adjust and balance operations.
- .2 Make instruments available to Contract Administrator to facilitate spot checks during testing.
- .3 Retain possession of instruments and remove at completion of services.
- .4 Verify systems installation is complete and in continuous operation.
- .5 Verify lighting is turned on when lighting is included in cooling load.
- .6 Verify equipment such as computers, laboratory and electronic equipment, are in full operation.

1.10 EXECUTION

- .1 Test equipment, balance distribution systems, and adjust devices for all systems.

END OF SECTION

-
- 1**
- 1.1** **General**
SECTION INCLUDES
- .1 Procedures for demonstration and instruction of equipment and systems to The City's personnel.
- 1.2** **RELATED SECTIONS**
- .1 Section 01721 - Project Record Documents: Operation and Maintenance Data.
- .2 Individual Sections: Demonstrating systems and equipment.
- 1.3** **DESCRIPTION**
- .1 Demonstrate scheduled operation and maintenance of equipment and systems to City personnel prior to date of Substantial Performance.
- .2 City to provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.
- 1.4** **QUALITY CONTROL**
- .1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct City personnel, and provide written report that demonstration and instructions have been completed.
- 1.5** **SUBMITTALS**
- .1 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Contract Administrator's approval.
- .2 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .3 Give time and date of each demonstration, with a list of persons present.
- 1.6** **CONDITIONS FOR DEMONSTRATIONS**
- .1 Equipment has been inspected and put into operation in accordance with Section 01660.
- .2 Ensure testing, adjusting and balancing have been performed in accordance with Section 01660 and equipment and systems are fully operational.
- .3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.
- 1.7** **PREPARATION**
- .1 Verify that conditions for demonstration and instructions comply with requirements.
- .2 Verify that designated personnel are present.
- 1.8** **DEMONSTRATION AND INSTRUCTIONS**
- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
- .2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.
- .3 Review contents of manual in detail to explain all aspects of operation and maintenance.
- .4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Progressive cleaning.
- .2 Final cleaning.

1.2 RELATED SECTION

- .1 Section 01770 - Take-Over Procedures.

1.3 PROJECT CLEANLINESS

- .1 Maintain the Work in tidy condition, free from accumulation of waste products and debris, other than that caused by The City or other Contractors.
- .2 Remove waste material and debris from the Site at the end of each week.
- .3 Contractor to maintain exterior of Site in a clean condition. Stock piling of materials or debris must be orderly.
- .4 Clean interior areas prior to start of finish Work, maintain areas free of dust and other contaminants during finishing operations.

1.4 FINAL CLEANING

- .1 *Refer also to C6.27, 6.27.1 and 6.27.2 of General Conditions for Construction Contracts*
- .2 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work.
- .3 Remove waste products and debris other than that caused by The City, other Contractors or their employees, and leave the Work clean and suitable for the occupancy by The City prior to Substantial Performance.
- .4 When the Work is totally performed, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris other than that caused by The City or other Contractors.
- .5 Remove waste materials from the Site at regularly scheduled times or dispose of as directed by the Contract Administrator. Do not burn waste materials on Site, unless approved by the Contract Administrator.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Leave the Work clean before the inspection process commences.
- .8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .9 Remove stains, spots, marks and dirt from decorative Work, electrical and mechanical fixtures, furniture fitments, walls and floors.

- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by the manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Broom clean and wash exterior walks, steps and surfaces.
- .14 Remove dirt and other disfiguration from exterior surfaces.
- .15 Clean and sweep roofs, gutters, areaways, sunken wells.
- .16 Sweep and wash clean paved areas.
- .17 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.
- .18 Clean roofs, downspouts and drainage systems.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Record documents, samples, specifications.
- .2 Equipment and systems.
- .3 Product data, materials and finishes, and related information.
- .4 Operation and maintenance data.
- .5 Warranties and bonds.

1.2 RELATED SECTIONS

- .1 Section 01300 - Submittals: Shop drawings, samples, manufacturers instructions, photographs.
- .2 Section 01400 - Quality Control: Test and inspect reports.
- .3 Section 01660 - Testing, Adjusting and Balancing of Systems: Test and balance, system performance verification and takeover procedures.
- .4 Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.3 SUBMISSION

- .1 Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- .2 Submit one copy of completed volumes in final form 14 days prior to substantial performance.
- .3 Copy will be returned after final inspection, with Contract Administrator's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, FOUR final copies of operating and maintenance manuals.

1.4 FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: commercial quality, 3 D-ring, 8 1/2 x 11 inch (219 x 279 mm) maximum ring size.
- .3 When multiple binders are used, correlate data into related consistent groupings.
- .4 Cover: Identify each binder with type or printed title "Project Record Documents"; list title of Project, identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Test: Manufacturer's printed data, or typewritten data on 20 pound paper.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.5 CONTENTS, EACH VOLUME

- .1 Table of Contents: provide title of project; names, addresses, and telephone numbers of Contract Administrator and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- .2 For Each Product or System: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01601.

1.6 RECORD DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the Site for The City one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain Record Documents in a clean, dry and legible condition. Do not use Record Documents for construction purposes.
- .5 Keep Record Documents and samples available for inspection by Contract Administrator .
- .6 The Contractor will be responsible for supplying The City "as built" drawings in the following format:
 - .1 Each "as built" drawing in an AutoCad format on CD.
 - .2 Each drawing shall be a separate document representing a computerized version of the hard copy.
 - .3 Each drawing document shall contain only that information related to that drawing number. All layers shall be active. All non-related layers and information to be removed.
 - .4 Provide an AutoCad font file of all fonts used.
 - .5 Provide a DXF file for each drawing document on separate disks.
 - .6 Provide hard copy 3 mil double matte mylar "As Built" reproducible drawings of all sheets.
 - .7 Cost to obtain drawing files in AutoCad shall be set at \$50.00 per drawing and the Contractor will be required to sign a waiver to be eligible to obtain the drawings for use as electronic As-Builts

1.7 ORIGINAL RECORDING OF ACTUAL SITE CONDITIONS - AS-BUILTS

- .1 The original " as-built " recording will be in the following format. The requirement to supply "As-built" on Autocad will also be required AND AS DESCRIBED IN 1.6.6 ABOVE.
- .2 Record information on set of opaque drawings, provided by Contract Administrator.
- .3 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .4 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .5 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical appurtenances, referenced to permanent surface improvements.
 - .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.
- .6 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalog number of each project actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .7 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specification sections.
- .8 Submit one copy of all record information to Contract Administrator prior to release of all final hold-back accounts.

1.8 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.

- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Sections 01400, 01660 and 01670.
- .15 Additional Requirements: As specified in individual specification sections.

1.9 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

1.10 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to the List of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of Work.
- .4 Except for items put into use with The City's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Section includes:
 - .1 Spare parts.
 - .2 Maintenance materials.
 - .3 Special tools.

1.2 RELATED SECTIONS

- .1 Section 01660 Testing, Adjusting and Balancing of Systems - Delivery and receipt of spare parts associated with testing, adjusting and balancing
- .2 Section 01670 Systems Demonstration - Systems demonstration
- .3 Section 01721 Project Record Documents - Project record documents
- .4 Section 01770 Take-Over Procedures - Take-over procedures
- .5 Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.3 QUALITY

- .1 Spare parts, maintenance materials and special tools provided shall be new, not damaged or defective, and of the same quality and manufacture as Products provided in the Work.
- .2 If requested, furnish evidence as to type, source and quality of Products provided.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.4 TRANSPORTATION

- .1 Pay costs of transportation.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 *Refer also to C10 of General Conditions for Construction Contracts*
- .2 Store spare parts, maintenance materials and special tools in a manner to prevent damage, or deterioration.
- .3 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .4 Store components subject to damage from weather in weatherproof enclosures.
- .5 Store paints and freezable materials in a heated and ventilated room.
- .6 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.

1.6 SPARE PARTS

- .1 Provide spare parts in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in the Work.
- .3 Deliver to Project Site location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual specified in Section 01721.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.7 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in the Work.

.3 Deliver to Project Site location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual specified in Section 01721.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.8 SPECIAL TOOLS

.1 Provide special tools in quantities specified in individual specification Sections.

.2 Provide items with tags identifying their function and equipment to which they are associated.

.3 Deliver to Project Site location as directed; place and store.

.4 Receive and catalogue all items. Include listings in Maintenance Manual specified in Section 01721.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Administrative procedures preceding preliminary and Substantial Performance inspections of the Work.

1.2 RELATED SECTIONS

- .1 Section 01660 Testing, Adjusting and Balancing of Systems - Testing, adjusting and balancing
- .2 *Refer also to C6.29, C6.30 and C11 of General Conditions for Construction Contracts.*

1.3 INSPECTION AND DECLARATION PROCEDURES

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of the Work, identify deficiencies and defects; repair as required to conform to Contract Documents. Notify Contract Administrator in writing of satisfactory completion of Contractor's Inspection and that corrections have been made. Request a Contract Administrator Inspection.
- .2 Contract Administrator Inspection: Contract Administrator, Contract Administrator Representatives and Contractor will perform an inspection of the Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit a written certificate that the following has been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents
 - .2 Defects have been corrected and deficiencies have been completed,
 - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational,
 - .4 Certificates required by Boiler Inspection Branch Fire Commissioner Utility companies have been submitted,
 - .5 Operation of systems have been demonstrated to The City's personnel, and
 - .6 Work is complete and ready for Final Inspection.
- .4 Inspection for Substantial Completion: when items noted above are completed, request a Substantial Completion Inspection of the Work by Contract Administrator and Contractor and do so allowing a 7 working day Notice. If Work is deemed incomplete by the Contract Administrator, outstanding items are to be completed and a re-inspection requested.
- .5 Declaration of Substantial Performance: when the Contract Administrator considers deficiencies and defects have been corrected and it appears requirements of the Contract have been substantially performed, make application for certificate of Substantial Performance.
- .6 Commencement of Lien and Warranty Periods: date of Certificate of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of the Place of the Work.
- .7 Declaration of Total Performance: when Contract Administrator considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for certificate of Total Performance. If Work is deemed incomplete by Contract Administrator, complete outstanding items and request re-inspection.
- .8 Final Payment: following completion of lien period, submit claim for final payment in accordance with *General Conditions for Construction Contracts*.

END OF SECTION